

WHAT IS CLAIMED IS:

1. A magnetic memory comprising:

a spin polarization unit configured to spin-polarize  
5 electrons constituting a write current;

a hot electron generation unit configured to convert the  
electrons into hot electrons; and

a magnetic layer magnetization of which is reversed by  
the hot electrons.

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2. The magnetic memory according to claim 1, wherein

a response characteristic of an electric current flowing  
as a result of application of a voltage to the hot electron  
generation unit is non-linear.

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3. The magnetic memory according to claim 1, wherein

the hot electron generation unit includes an insulation  
film which enables the write current to tunnel through the  
insulation film in a thicknesswise direction thereof upon

20 application of a voltage.

4. The magnetic memory according to claim 1, wherein

the hot electron generation unit includes two conductive  
layers and an insulation film formed between the two conductive

25 layers; and

the insulation film includes a conductive area.

5        5.        The magnetic memory according to claim 1, wherein  
the hot electron generation unit includes a Schottky  
junction.

6.        The magnetic memory according to claims 1, further  
comprising:

10        a magnetic layer in which a first crystal axis is aligned  
in a direction perpendicular to a film surface; and

      a non-magnetic layer which is stacked on the magnetic  
layer and in which a second crystal axis is aligned in the  
direction perpendicular to the film surface, wherein

15        one of a symmetry of an up-spin band and a symmetry of  
a down-spin band, which is achieved at an energy level higher  
than a Fermi energy level of electrons traveling in the direction  
of the first crystal axis in the magnetic layer, is not present  
in a band of electrons located at an energy level higher than  
the Fermi energy level of electrons traveling in the direction  
20        of the second crystal axis in the non-magnetic layer.

7.        The magnetic memory according to claims 1, wherein  
the spin polarization unit is a magnetic layer in which  
magnetization is fixed in substantially one direction.

8. A method of writing data into a magnetic memory comprising:

spin-polarizing electrons constituting a write current;  
converting the electrons into hot electrons; and  
5 reversing magnetization of a magnetic layer by the hot  
electrons.

9. A magnetic memory comprising:

a first electrode;  
10 a first magnetic layer formed above the first electrode;  
a first non-magnetic layer formed on the first magnetic  
layer;  
a second magnetic layer formed on the first non-magnetic  
layer;  
15 a first insulation film formed on the second magnetic  
layer;  
a first layer formed on the first insulation film;  
a second non-magnetic layer formed on the first layer;  
and  
20 a second electrode formed on the second non-magnetic  
layer.

10. The magnetic memory according to claim 9, wherein  
the first layer is a non-magnetic layer.

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11. The magnetic memory according to claim 9, further comprising:

a second insulation film formed between the first electrode and the first magnetic layer, wherein

5 the first layer is a non-magnetic layer.

12. The magnetic memory according to claim 9, further comprising:

a second insulation film formed between the first  
10 electrode and the first magnetic layer, wherein

the first layer is a magnetic layer.

13. The magnetic memory according to claim 9, further comprising:

15 a second insulation film formed between the first electrode and the first magnetic layer, wherein:

the first layer is a magnetic layer; and

the first non-magnetic layer is a third electrode.